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UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	Kyrtsos
Serial No.:	09/628,396
Filed:	August 1, 2000
Group Art Unit:	3634
Examiner:	J. Redman
Title:	OBJECT DETECTION BY SIGNAL FIELD MAPPING

APPEAL BRIEF

Box AF
Assistant Commissioner of Patents
Washington, D.C. 20231

Dear Sir:

Subsequent to the filing of the Notice of Appeal on 17 September 2001, Appellant hereby submits its brief. Enclosed is a check in the amount of $320.00 for the appeal brief fee. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

Real Party in Interest

The real party in interest is Meritor Light Vehicle Systems, LLC the assignee of the entire right and interest in this Application.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-20 stand finally rejected under 35 U.S.C. §112.

Claims 1, 2 and 4-20 stand finally rejected under 35 U.S.C. §102(e).

Claim 3 stands finally rejected under 35 U.S.C. §103(a).

Status of the Amendments

All amendments have been entered.

Summary of the Invention

This invention relates to an object detection system 10. The system 10 is preferably attachable or integral to a window assembly 12 having a moveable closure member 14. The moveable closure member 14, such as a vehicle window is movable through a closure path within a frame 16 typical of a vehicle 17 having a power window, sunroof, or the like.

As shown in Figure 2, the system 10 generally includes an emitter 18, a receiver 20, and a controller 22 attachable to the window assembly 12. The controller 22 constructs a map of the signal 24 received by the receiver 20 such that insertion of an object (shown schematically at 33) within the defined field produces a variation in the map. The controller 22 can then halt or reverse the movement of the moveable closure member 14 to prevent trapping object 33 between the closing moveable glass member 14 and the frame 16.

In operation, the emitter 18 transmits the signal 24 within the defined field 26. The signal 24 is preferably an electromagnetic or ultrasonic signal and emitter 18 may transmit the signal 24 continuously or in a pulse to minimize power usage.

The transmitted signal 24 will reflect from obstructions that are always within the defined field 26 such as portions of the frame 16. The receiver 20 will therefore receive a relatively constant reflection which is identified by the controller 22. Whereas the receiver 20 receives a relatively constant signal 24 reflection, the controller 22 constructs a map 28 of the received signal 24 as illustrated in Figure 3. Mapping algorithms can be provided by signal processing circuitry well known in the art of processing signals and further description of these algorithms will not be discussed.

A "normal" map signature 30 of the received signal 24 including the obstructions normally within the defined field 26 (Figure 2) is used by the controller 22 as a reference. The "normal" map signature 30 indicates to the controller 22 that no unknown objects are within the defined field 26.

To identify whether an object 33 is within the defined field 26, the controller 22 compares the reflected signal 24 to the "normal" map signature 30 (Figure 3.) If the reflected signal 24 is within a predetermined range of the "normal" map signature 30, then a determination is made that no unknown objects are within the defined field 26. However, when an unknown object 33 (Figure 2) enters within the defined field 26, a variation from the "normal" map signature 30 such as varied map signature 32 will be constructed by the controller 22. The controller 22 compares the varied map signature 32 to the "normal" map signature 30 and identifies any differences between the "normal" map signature 30 and the varied map signature 32. The controller 22 thus determines that an unknown object 33 is within the defined field 26 and can stop movement of the moveable closure member 14 as described above. The independent claims 1, 10 and 14 all require that a graphical shape of a signal representative of known obstructions is constructed, and that actual signals be compared to this shape to identify an obstruction.

Controller 22 is programmed to recognize movement of the moveable closure member 14 through the closure path 15. As the moveable glass member 14 moves through the defined field 26 the "normal" map signature 30 can be accordingly adjusted to prevent a false object detection caused by movement of the moveable closure member 14. This feature is included in claims 18-20, which are dependent to the independent claims.

Issues

Is the final rejection of claims 1-20 under 35 U.S.C. 112, second paragraph, proper as being indefinite for failing to particularly point out and distinctively claim the subject matter which Appellant regards as the invention?

Is the final rejection of claims 1,2 and 4-20 under 35 U.S.C. 102(e) proper over U.S. Patent No. 5,955,854 to *Zhang*?

Is the final rejection of claims 18-20 under 35 U.S.C. 102(e) proper over U.S. Patent No. 5,955,854 to *Zhang*?

Grouping of Claims

A. The rejection of Claims 1-20 under 35 U.S.C. 112 is contested.

B. The art rejection of Claims 1-20 is contested.

C. The art rejection of Claims 18-20 is separately contested. That is, claims 18-20 do stand or fall with claims 1, 9 and 14 respectively.

Patentability Arguments

A. The Rejection of Claims 1-20 Under 35 U.S.C. 112 is Improper

Claims 1-20 stand rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctively claim the subject matter which Appellant regards as the invention. In the Final Office Action, the Examiner argues that the claims are indefinite.

The Examiner argues that in claim 1, lines 6-11 the phraseology *"a first graphical shape representative of known obstructions normally within a defined field"* and *"said controller operable to construct a second graphical shape in response to an unknown object entering said defined field"* is not readily understood. The Examiner also argues that in claim 10, lines 6-7 that the phraseology *"said map signature having a first graphical shape representative of known obstructions normally within said defined field""* is not readily understood. The Examiner again then argues that in claim 14, lines 6-7 the phraseology *"a first graphical shape representative of known obstructions normally within said defined field""* is not readily understood. With regard to this phraseology, the examiner asks two questions:

What are known obstructions?; and What is defined as normal?

The words within the claims, by their ordinary meaning provide a definite recitation of the claimed structure and answer the questions posed by the Examiner. Of course, this language must be read in the context of the specification and drawings.

The "known obstructions" are those things which are always properly within the defined field of view. They are known. As explained in the specification at page 3, line 28- page 4, line 1, "The transmitted signal 24 will reflect from obstructions that are always within the defined field

26 such as portions of the frame 16. The receiver 20 will therefore receive a relatively constant reflection which is identified by the controller 22." Other examples of such known obstruction could be portions of the door lock stalks, window seals, etc.

Whereas the present invention must generate a map signature having a first graphical shape representative of known obstructions normally within said defined field for comparison purposes, it is inherent that some sort of "known obstructions" must exist within the defined field. That is, if there were no obstructions whatsoever in the defined field (the emitter was pointed into space), no first graphical shape could be generated. Taken another way, the known obstructions are what define the first graphical shape. Should an unknown object, however, come within the defined filed, the graphical shape will change and the "unknown object" will be thereby detected.

The Examiner also questions what is meant by "known obstructions *normally* within a defined field." Again, taken in context with the specification and drawings, the obstructions are known precisely because they are *normally* within the defined field as discussed above. That is, it is "normal" for the "known obstructions" to be within the defined field. The language is clear on its face. In the context of this application, the claims are definite.

The "map signature" language is known within the art of mapping, and a worker in this art would recognize quite well what is being disclosed and claimed in this application. Thus, it is submitted that the claims are improperly rejected under 35 U.S.C. §112. Reconsideration is requested.

B. The Rejection of Claims 1,2 and 4-20 Under 35 U.S.C. 102(e) is Improper

Claims 1,2 and 4-20 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,955,854 to *Zhang*. *Zhang* does not disclose constructing "a map signature of said signal received by said receiver, said map signature having a first graphical shape representative of known obstructions normally within said defined field" as recited in each independent claim. *Zhang* only detects an increase in a reflected signal. *See Col. 10, lines 31-34*. The simple detection of a reflected signal is not "mapping" as would be understood by a worker in this art, and certainly is not a "map signature having a first graphical shape representative of known obstructions normally within" a defined field. That is, the disclosed and claimed system takes what is there and looks for variation. *Zhang* only looks for an obstruction.

The claimed system improves on the mere detection of an increase in the reflected signal, which is relatively easy to confuse. This is the reason for *Zhang's* overriding concern for reflection from clouds, the sun and other sources which would provide a false increase in the reflected signal. *[See Zhang Figs. 34, 36, 48, 58, 59, and 61.]* Mapping according to the present invention is unaffected by such false reflections.

C. The Rejection of Claims 18-20 under 35 U.S.C. 102(e) is Improper

These claims require the "first graphical shape" be altered in response to the movable closure (the window) moving through the field. *Zhang* has no first graphical shape, but anything the Examiner could possibly equate to such shape, is not altered as required by these claims.

Closing

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant earnestly requests such an action.

Respectfully submitted,

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Dated: November 19, 2001

CERTIFICATE OF MAILING

I hereby certify that the attached Appeal Brief is being deposited in triplicate with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to Box AF, Assistant Commissioner of Patents, Washington, D.C. 20231, on November 19, 2001.

Raimi Blackerby

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CLAIM APPENDIX

1. An object detection system for a vehicle comprising:

an emitter mounted to transmit a signal within a defined field, said defined field adjacent a closure path of a moveable closure member;

a receiver to receive said signal as transmitted within said defined field; and

a controller in communication with said receiver, said controller operable to construct a map signature of said signal received by said receiver, said map signature having a first graphical shape representative of known obstructions normally within said defined field, said first graphical shape representative of said defined field when said defined field is clear of unknown objects, said controller operable to construct a second graphical shape in response to an unknown object entering within said defined field, variation from said first graphical shape indicative of said unknown object.

2. The system as recited in claim 1, wherein said emitter emits an ultrasonic signal.

3. The system as recited in claim 1, wherein said emitter emits an electromagnetic signal.

4. The system as recited in claim 1, wherein said emitter transmits said signal as a pulse.

5. The system as recited in claim 1, wherein said moveable closure member includes a vehicle window.

6. The system as recited in claim 1, wherein said emitter is attached to a vehicle window frame.

7. The system as recited in claim 1, wherein said receiver is attached to a vehicle window frame.

8. The system as recited in claim 1, wherein said emitter transmits said signal only when said closure member is being closed.

9. The system as recited in claim 8, wherein said controller stops movement of said moveable closure member in response to identification of said variation in said defined field.

10. A moveable closure assembly comprising:

a moveable closure member moveable through a closure path;

an emitter mounted to transmit a signal within a defined field, said defined field adjacent said closure path;

a receiver to receive said signal as transmitted within said defined field; and

a controller in communication with said receiver, said controller operable to construct a map signature of said signal received by said receiver, said map signature having a first graphical shape representative of known obstructions normally within said defined field such that insertion of an unknown object within said defined field produces a variation from said first graphical shape.

11. The assembly as recited in claim 10, further comprising an actuator to move said window glass through said closure path.

12. The assembly as recited in claim 11, wherein said controller is in communication with said actuator and said emitter, said emitter transmitting said signal only when said closure member is being moved in a first direction.

13. The assembly as recited in claim 11, wherein said controller is in communication with said actuator and said emitter, said controller operable to stop said actuator in response to identification of said variation in said map.

14. A method of detecting an object in a moveable closure path comprising the steps of:

(1) transmitting a signal within a defined field, said defined field adjacent a closure path of a moveable closure member;

(2) receiving said signal as transmitted within said defined field;

(3) mapping said signal received in said step (2) as a first graphical shape representative of known obstructions normally within said defined field; and

(4) identifying a variation in said graphical shape of said step (3).

15. A method as recited in claim 14, further comprising the step of reversing movement of said moveable closure member in response to said variation in said signal.

16. A method as recited in claim 14, wherein said step (1) includes transmitting said signal only when said moveable closure member is being closed.

17. A method as recited in claim 14, wherein said step (1) includes transmitting said signal as a pulse.

18. The system as recited in claim 1, wherein said first graphical shape is altered as said moveable closure member moves through said defined field.

19. The system as recited in claim 9, wherein said first graphical shape is altered as said moveable closure member moves through said defined field.

20. A method as recited in claim 14, further comprising the step of altering said first graphical shape in response to said moveable closure member moving through said defined field.